

ABSTRACT OF THE DISCLOSURE

An acid copper plating solution comprises copper ions, an organic acid or an inorganic acid, chloride ions, a high molecular weight surfactant that controls the electrodeposition reaction, and a sulfur-containing saturated organic compound that promotes the electrocoating rate. The high molecular weight surfactant comprises two or more types of surfactants with different hydrophobicities. The plating solution is used for forming a plating film on a conductor layer.